

What is Claimed is:

1. A method for concentrated heat deposition of a coating on a substrate, said method comprising the steps of:
 - (a) providing at least one coating heat source to deposit the coating on the substrate, the coating heat source also capable of heating a section of the substrate; and
 - (b) moving one of the substrate or the at least one coating heat source relative to the other such that the substrate is not damaged by the at least one coating heat source.
2. The method of Claim 1 wherein the substrate is vitreous.
3. The method of Claim 1 wherein the substrate is non-vitreous.
4. The method of Claim 1 wherein the substrate is a mixture of vitreous and non-vitreous phases.
5. The method of Claim 1 wherein the substrate can be thermally shocked.
6. The method of Claim 5 wherein the substrate is glass.
7. The method of Claim 6 wherein the substrate is float glass.
8. The method of Claim 1 wherein the substrate is plastic.
9. The method of Claim 1 wherein the substrate is incapable of plastic deformation.
10. The method of Claim 1 wherein the at least one coating heat source is at least one flame.
11. The method of Claim 1 wherein the at least one coating heat source is at least one plasma torch.
12. The method of Claim 1 wherein the at least one coating heat source comprises at least two heat sources, the at least two heat sources comprising at least two different types of heat sources.
13. The method of Claim 1 wherein the at least one coating heat source raises the temperature of the substrate by no more than 250° C.
14. The method of Claim 1 wherein the at least one coating heat source comprises at least two coating heat sources, and one of the substrate or all of the at least two coating

heat sources are moved relative to the other such that the substrate is not damaged by any of the at least two coating heat sources.

15. The method of Claim 14 wherein:

the section is first heated by one of the at least two coating heat sources,
and after a first time period is heated by another of the at least two coating heat
sources; and the first time period is long enough to allow thermal recovery of the
section.

16. The method of Claim 15 wherein:

the one of the at least two coating heat sources increases the temperature
of the section by X degrees C.; and

the first time period is of a length sufficient to allow the temperature of
the section to be reduce by between 10%-90% of X prior to heating by the other
of the at least two coating heat sources.

17. The method of Claim 1 wherein the substrate is not fractured by the at least one
coating heat source.

18. The method of Claim 1 wherein the substrate is not warped or deformed by the
at least one coating heat source.

19. The method of Claim 1 wherein the substrate is not melted by the at least one
coating heat source.

20. The method of Claim 1 wherein the moving of one of the substrate or the at least
one coating heat source relative to the other is at a velocity of between 1 to 2000
inches per minute.

21. The method of Claim 1 wherein the substrate is preheated prior to forming the
coating.

22. The method of Claim 1 wherein the maximum temperature of the substrate is
between 50 to 2000 degrees C.

23. The method of Claim 1 wherein the coating is an oxide.

24. The method of Claim 1 wherein the coating is a metal.

25. The method of Claim 1 wherein the coating is a mixture of an oxide and a metal.

26. The method of Claim 1 wherein the coating is a nitride.

27. The method of Claim 1 wherein the coating is a boride.
28. The method of Claim 1 wherein the coating is a carbide.
29. The method of Claim 1 wherein the coating is a phosphide.
- 5 30. The method of Claim 1 wherein the step of moving one of the substrate and the at least one coating heat source relative to the other comprises depositing the coating on a first path across a surface of the substrate.
31. The method of Claim 30 wherein the first path is linear.
32. The method of Claim 31 wherein the step of moving one of the substrate and the at least one coating heat source relative to the other further comprises depositing the coating on a second path across the surface of the substrate, the second path being parallel to and spaced a specific distance from the first path.
- 10 33. The method according to Claim 32 wherein the step of moving one of the substrate and the at least one coating heat source relative to the other further comprises depositing the coating on a plurality of paths across the surface of the substrate, each of the plurality of paths being parallel to the first and second paths and spaced the specific distance from each other.
- 15 34. The method according to Claim 33 wherein the step of moving one of the substrate and the at least one coating heat source relative to the other comprises depositing the coating on a plurality of paths across the surface of the substrate involves depositing the coating from one edge of the substrate to the opposite edge of the substrate on every other path of the plurality of paths, and depositing the coating from the opposite edge of the substrate to the one edge on paths adjacent to the every other paths, such that a rastering pattern is traversed by the at least one coating heat source across the substrate.
- 20 35. The method according to Claim 33 wherein the step of moving one of the substrate and the at least one coating heat source relative to the other comprises depositing the coating on a plurality of paths across the surface of the substrate involves depositing the coating from one edge of the substrate to the opposite edge of the substrate on all paths of the plurality of paths.
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36. The method according to claim 33 wherein the specific distance is large enough such that the substrate is allowed to cool after deposition by the at least one coating heat source prior to deposition by the at least one heat source on adjacent paths.
- 5 37. The method according to Claim 33 wherein the plurality of paths include a first plurality of paths and a second plurality of paths, and the step of moving one of the substrate and the at least one coating heat source relative to the other further comprises first depositing the coating on the first plurality of path and then depositing the coating on the second plurality of paths.
- 10 38. The method according to Claim 33 wherein the first plurality of paths are identical to the second plurality of paths such that areas of greater and lessor coating thicknesses are formed on the surface of the substrate.
39. The method according to Claim 33 wherein the first plurality of paths are at right angles to the second plurality of paths such that areas of greater and lessor coating thicknesses are formed on the surface of the substrate in the form of a grating pattern.
- 15 40. The method according to Claim 33 wherein the first plurality of paths are parallel to and between adjacent paths of the second plurality of paths such that a uniform coating is formed on the surface of the substrate.
- 20 41. An article made by a method, the method comprising the steps of:
(a) providing at least one coating heat source for heating a section of the substrate to a temperature sufficient to form the coating on the section;
and
(b) moving one of the substrate or the at least one coating heat source
25 relative to the other such that the substrate is not damaged by the at least one coating heat source.
42. The article according to claim 41, said article being one of a tempered or annealed article that does not require reheating after the method to retain the temper or annealing.

43. A method for coating a substrate with one of a thin film, a multi-layer or a thick film coating having specific properties, said method maintaining the temperature of the substrate such that the resulting coating has the specific properties throughout the entire thickness of the coating.
- 5 44. The method of claim 43 wherein the maintaining of the temperature of the substrate preserves the original stress in the substrate such that the substrate can be coated, cooled and cut without a formal annealing process.
45. The method of claim 43 wherein the temperature the substrate is maintained at is equal to or below traditional pyrolytic spray temperatures.
- 10 46. The method of claim 43 wherein a gas temperature of the coating method is within 50° C of the substrate temperature.
- 47 The method of claim 1 wherein the at least one heat source comprises deposition gasses, said deposition gasses having a temperature within 50° C of the temperature of the section of the substrate.